

RESEARCH PAPER



How to promote vaccinations: a pilot study in the North-West of Italy

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ABSTRACT

Background: vaccines are one of the greatest medical discoveries. In various countries, pharmacists are authorised to administer vaccines directly in pharmacies; thus, leading to an increase in the immunisation rate and a notable gain in consensus amongst the population.

The main objective was to evaluate the opinion of pharmacy customers regarding the proposal to authorise pharmacies to administer vaccines.

Results: 85% of the respondents were in favour of the introduction of a vaccinating pharmacist. The data show more positive attitudes to the introduction of this service amongst subjects with an elderly dependant relative (PR = 1,10; p = 0.025). Furthermore, it can be noticed a higher probability of positive attitudes to the establishment of the vaccinating pharmacist amongst those with positive attitudes to vaccines (PR = 1,15; p = 0.039). Moreover, the pharmacist is seen as a reference on the subject of vaccines by only 8% of interviewees.

Discussion: The data highlight the particularly positive feedback regarding the subject of pharmacists being authorised to administer vaccines. This service may, however, encounter obstacles such as economic problems and opposition from other health professionals.

Materials and methods: Data were gathered through a face-to-face interview by means of questionnaires in eight pharmacies in the north-west of Piedmont (Italy). Descriptive statistics were performed. The comparison between the proportions and average values was performed by χ^2 and t-test. The indicator used for the associations was the Prevalence Ratio (PR). The PR was calculated using a modified Poisson regression with robust standard errors. The level of significance was fixed at 0.05; IC at 95%.

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Introduction

Vaccines are recognised as one of the greatest success in biomedical science and public health.¹ Thanks to vaccines, it has been possible to eradicate once common diseases such as smallpox and eliminate others such as poliomyelitis. In addition, according to data provided by the World Health Organisation (WHO), the introduction of mass vaccination has led to the halving of the number of deaths due to the most common diseases prevented by vaccines. This saves between 2 and 3 million lives globally every year.² Moreover, there are significant gains in terms of cost effectiveness and benefits/risks.² However, the public perception of vaccines does not always match the approval displayed in the scientific community. By way of example, an investigation carried out in 67 countries by the *Vaccine Confidence Project* at the *London School of Hygiene & Tropical Medicine* on the public's opinion of vaccines showed that only 24.57% of respondents in Italy were absolutely convinced of the safety of vaccines.³ The lack of confidence may have contributed to the decrease in immunisation rates and to the consequent increase in the number of cases of diseases such as measles, which in the 21st century should by now have been eradicated.³⁻⁵ Italy has witnessed plummeting rates of immunisation amongst newly-born babies. Consulting the 2016 data about the 2014 cohort, for

the main infectious diseases that can be prevented by vaccination (poliomyelitis, diphtheria, whooping cough, hepatitis B, measles, HIB meningitis, mumps, rubella, chickenpox, Meningococcus C infections and pneumococcus infections), the percentage of vaccinated subjects has fallen to alarmingly low levels.⁵ It should be pointed out that only an adequate level of vaccination can curtail the circulation of microbe sufficiently to extend protection to those who for various reasons cannot be vaccinated.⁶

Factors such as a capillary distribution network on the territory and extended opening hours make the pharmacy an indispensable forward base for the National Health Service. This potential could be further exploited within any vaccination programme. For some time now, pharmacies in a number of European countries and other countries around the world have been involved in vaccination campaigns; numerous studies have demonstrated the success of this strategy of using the pharmacy to provide vaccine information: to illustrate the benefits and side-effects, to remind people of their booster shots and, in general, to promote educational programmes and awareness campaigns amongst the population on the theme of vaccination.⁷

Over the last few years, pharmacists both in Europe and worldwide have taken on a more active role in vaccination campaigns; both stocking and distributing vaccines to General

Practitioners (GP) and even administering vaccines directly in the pharmacy such as in Ireland, Portugal, United Kingdom.⁷ It should be noted that in countries where this service has been introduced, there has been not only an increase in the immunisation rate, but important gains in the other activities mentioned above.⁷

At present in Italy, pharmacies have only been involved in some aspects within vaccination campaigns. The Piedmont region, for example, decided to entrust some tasks to pharmacies during the anti-influenza vaccination campaign in the 2016/2017 season. In particular, Piedmont aimed to involve pharmacists in the attempt to raise awareness among the population of the importance of vaccination through the use of posters and brochures. In addition, pharmacies in Piedmont co-operated with GP and Primary Care Pediatrician (PCP) to identify subjects with the highest risk of developing complications as a consequence of influenza to be referred for vaccination. The GP and PCP also relied on the pharmacies to receive the required doses of influenza vaccine.⁸ However, pharmacists in Italy are not yet authorised to administer vaccines.^{7,9-12}

The main aim of this study was to evaluate, by the use of a questionnaire, the attitudes of pharmacy customers regarding the proposal that pharmacists be allowed to administer vaccines. Furthermore, customers' attitudes to vaccines were recorded in order to understand whether the respondents have confidence in the safety and efficacy of vaccines; whether respondents have doubts about their safety or they are strongly opposed to vaccination. Successively, we identified which, if any, variables influence public opinion, either positive or negative, on vaccines. Another aspect taken into consideration in the study was how the population regards the figure of the pharmacist as a counsellor on the subject of vaccines, compared to other sources of information such as GP or the Internet, in order to promote the pharmacist's role in this field.

Results

A total of 320 subjects agreed to participate in the study. 135 individuals refused to take part to this study 62 of whom were females and 73 males. On the contrary the majority of respondents were females (65%). The average age of interviewed subjects was 52.98 years (SD 16.03 years). Comparing the same values between the two subgroups (favourable and opposed to the proposal that pharmacists could administer vaccines), it can be noticed that the average age is slightly higher among those who declared themselves opposed to the proposal that pharmacists could administer vaccines (54.55 years, SD 15.36 years) compared to those in favour (52.71 years, SD 16.15 years). The t-test shows, however, that this difference is not significant ($p = 0.47$).

One of the main questions of the study concerns the possibility of the introduction of a pharmacy vaccinating service: 85% of respondents affirmed that if pharmacists were authorised to administer vaccines, they would avail of this service.

Only 15%, on the contrary, affirmed that they would continue to rely on their GP or public health centre for vaccination even if this service was available at the pharmacy. From the data gathered, it can be noticed that among those who declared that they would not utilise the vaccination service at

a pharmacy, there is a slightly higher percentage of those who considered a pharmacy as an inappropriate place for the administration of vaccines (55%).

The analysis of the data suggests an association between the desire for the creation of the position of vaccinating pharmacist and having an elderly person to care for ($PR = 1,10$; $p = 0,025$).

As far as attitudes to vaccines are concerned, 76% of respondents affirmed that vaccines are safe and effective. Moreover, the data gathered seem to suggest a greater probability of being in favour of pharmacists administering vaccines amongst those who have favourable attitudes to vaccines ($PR = 1,15$; $p = 0,039$).

The questionnaire also included some questions focusing on practical aspects of the vaccination service in pharmacies e.g. whether respondents would be willing to pay a share of the costs to the health system¹³ for this service in order to avail of it. On this subject, 51% of the respondents declared that they would not be willing to pay to make use of this service.

Amongst the 273 individuals who declared that they would make use of the vaccination service in pharmacies, there was a clear majority (67%) in favour of using an appointment system rather than simply coming during particular hours set by the pharmacy for all customers.

The study also focused on two other factors: the distance between the respondent's home and the nearest pharmacy, and the distance between respondent's home and the nearest public health centre. From the data gathered, it could be concluded that there is no significant link between the distance to the nearest public health centre and attitudes to vaccinations being administered by pharmacists. Indeed, the percentage of favourable responses to the question of pharmacists being authorised to administer vaccines among those respondents who lived within 5km from the nearest public health centre was 86%; amongst those who lived at a distance of more than 5km, the percentage of favourable responses was 84% ($p = 0.37$). Nor did the distance between home and the nearest pharmacy create a significant distinction between those in favour or against pharmacists being authorised to administer vaccines. Indeed, the percentage of those in favour of pharmacists administering vaccines amongst respondents living within 5 km of a pharmacy was 84% while 86% of individuals living outside a 5 km radius were in favour ($p = 0.80$).

Concerning educational qualifications, among those who declared to have a primary school education it can be noticed an higher percentage of those who were contrary to the introduction of a vaccine service in pharmacies (33%) if compared with respondents with a higher level of education. As regards the other levels of educational qualification considered (middle school diploma, high school diploma, university degree), there are no significant differences and, moreover, in all three cases, the percentage of respondents in favour of using the vaccination service in pharmacies exceeded 80%; therefore, showing a great deal of appreciation for this service. The statistical analysis of the data revealed that this difference is not significant ($p = 0.31$).

The study also investigated the correlation between occupation and attitudes to vaccination services being introduced in pharmacies. In order to glean more information from the

data gathered, it was decided to calculate the percentages for different occupations in the two sub-groups: those in favour and those opposed to vaccination services in pharmacies. The percentage of those not in paid employment such as retired people, students and the unemployed was very similar in both sub-groups ($p > 0.05$). Retired people, students and the unemployed accounted for 30%, 5%, and 5% respectively of the population of those in favour of the introduction of a vaccination service in pharmacies; amongst those opposed to the introduction of this service, these groups made up 30%, 2% and 6% respectively of the total of the subgroup.

Another result of interest that emerged from the data gathered was the absence of a statistically significant difference in attitudes to vaccines based on educational background ($p = 0.18$).

The study also set out to investigate the principal sources of information regarding vaccines used by respondents. The majority of the respondents (56%) affirmed that their GP was their first choice to obtain information about vaccines while the pharmacist was seen as a reference on the subject of vaccines by only 8% of interviewees. Furthermore, almost all the respondents (93%) believe that the sources of information they availed of were trustworthy even if the majority of respondents (80%) felt that healthcare professionals were still the most reliable sources when compared to the web or mass media.

Another point revealed by the study regarded compliance with the vaccination schedule: 87% of the respondents declared that they had complied with the schedule.

Discussion

Based on a literature search, this is the first such study carried out in Italy examining the introduction of a vaccination service in pharmacies. Although the sample size of the interviewed population was small, the results obtained are encouraging: 85% of respondents affirmed that if pharmacists were authorised to administer vaccines, they would avail of this service. This may lead to a desirable increase in the rate of vaccination amongst the population as observed in other countries where the pharmacist is authorised to administer vaccines.^{7,14} Hence, the pharmacy will demonstrate and confirm once again its indispensable role as a healthcare centre thanks to the longer opening hours, a capillary network on the territory and the trust placed in them by the public. Furthermore, the data gathered seem to suggest a higher appreciation towards the introduction of a vaccinating service in pharmacy amongst subjects with an elderly dependant relative. This would seem to indicate, therefore, that in the management of the vaccination schedule for the elderly, as in the example of the influenza vaccine, the pharmacy could lend a helping hand that would be gratefully appreciated by the public.

The percentage (55%) of those who affirmed that the pharmacy is not an appropriate place for administration of vaccines is probably attributable to the fact that in the event of an allergic reaction, the pharmacist would not be capable of dealing with the emergency. However, this issue can easily be overcome by providing proper courses at under-graduate pharmacy degree courses and ensuring that any pharmacist wishing to administer vaccines receives adequate training on

vaccination procedures as required in those countries where pharmacists are already authorised to administer vaccines.⁷

The introduction of a vaccinating service in pharmacies could, however, encounter some potential financial obstacles: a significant percentage of respondents, 51%, declared that they would not be willing to pay for this service. The high percentage of those who would not be prepared to pay for this service may be explained by the fact that, at present, vaccines included in the vaccine schedule are supplied and administered free of charge in Italy.¹⁵ Moreover, there are also other obstacles to be considered: other healthcare professionals may oppose the introduction of a vaccination service in pharmacies.

Compared to the results of other surveys,³ not conducted in pharmacy, the high percentage of those who declared that vaccines are safe and effective may be due to a social desirability bias.

Furthermore, the highest percentage of those who believe that vaccines are unsafe and ineffective was recorded in pharmacies located near an ethnic-religious community which is openly contrary to the use of vaccines.¹⁶

Since the scientific community unanimously supports the safety and efficacy of vaccines, a correlation between higher educational levels and greater support for vaccination as a safe, effective method was expected to emerge from the data gathered. Actually, scientific literature reports that in those countries with a highly educated population and greater access to healthcare services, there is a greater aversion to vaccines.¹⁷

According to the data gathered a low percentage of respondents had not completed the course of vaccinations. This may be due to the fact that, given the average age of the respondents, the majority of those who took part in the study belong to the generations for whom vaccination for some diseases was compulsory in order to attend school; a regulation abolished in 1999.¹⁸ This correlation cannot, however, be taken for granted, in other European countries such as Romania, despite the presence of compulsory vaccination, the immunisation rate is still relatively low.¹⁹ Another interesting case is the Baltic countries: Latvia, where vaccination is compulsory, does not reach the same immunisation rate as the other countries in the region such as Estonia and Lithuania, where vaccination is facultative.¹⁹

The Italian government recently changed the law regarding compulsory vaccination; law n. 119 of 31 July 2017 made it compulsory for children to be vaccinated against: poliomyelitis, diphtheria, tetanus, Hepatitis B, whooping cough and Haemophilus influenzae type b. The situation for four other vaccines is slightly different under the new law: vaccination for mumps, rubella chicken pox and measles will remain compulsory, but the Minister of Health, on a three-yearly basis and in agreement with the Italian Pharmaceutical Agency and the Higher Institute of Health, may review the situation and order the removal of one or more of these vaccines from the list of compulsory vaccines.²⁰ Unlike the trends in other countries, the reintroduction of compulsory vaccination seems to have been a success; according to the early statistics following the approval of this new law, there has been a significant increase in the immunisation rate.²¹

Finally, the project foresees a repetition of the study in a larger city such as Turin, in a longer time of data collection and involving a greater number of pharmacies and respondents in order to confirm the results obtained in the present study.

Materials e methods

The work herein was designed as a cross-sectional study and should be regarded as a pilot study to gather preliminary data with the view of expanding the research project to a wider area. The data collection was carried out from May 2017 to June 2017 in 8 pharmacies recruited on a voluntary basis, all within the province of Turin located in the same local health district. The pharmacies were selected to obtain as wide a range of locations, number of customers per day and business turnover as possible. Five of these pharmacies are located in towns with a population greater than 5,000 inhabitants.²² The remaining three are located in towns with a population of fewer than 5,000 inhabitants.²²

The data were obtained by means of a face-to-face interview using a questionnaire. A trained interviewer carried out the survey with the first 40 adult customers who indicated their willingness to participate in the study. The interviewer who conducted the survey was adequately trained and therefore it can be excluded that he may have influenced the answers of the interviewees. The questionnaire used was divided into three sections and mainly composed of close ended questions. The first section focused on general background information such as age, sex, education, occupation and residence. The second section regarded the respondent's attitudes to vaccines and their sources of information relating to these. This section also investigated whether the respondents were actively involved in caring for a family member in an age group, e.g. young child or elderly person, who should be vaccinated every year. The third and final section contained the most important question with regards to the aims of this study: "If pharmacists were authorised to administer vaccines, do you think you would make use of this service?". This question acted as a screening one; this is a kind of question that allows the interviewer, according to the answer provided, to omit other questions and proceed directly to a successive one.²³ In the case of an affirmative answer, the respondent was asked question 3; "If so, would you be willing to pay for this service?" and then question 4; "If so, would you prefer to make an appointment or come during certain hours open to all customers?". Instead, in the case of a negative answer, the interviewer continued with the question; "If not, why not?".

The survey was piloted on a small group of pharmacy customers for readability, understanding and reliability.

The data gathered were analysed using a calculation of the absolute frequency and the relative percentage frequency. The average value and the Standard Deviation (SD) was calculated for the age variable. The comparison between proportions and average values was obtained by χ^2 test and t-test. The indicator selected for the associations is the Prevalence Ratio (PR). The model used for the calculation of PR was a modified Poisson regression with robust standard errors. The level of significance was fixed at 0.05; IC at 95%

The statistical analysis was performed using the STATA14®.

Study limitations

A sampling bias could have occurred because of the recruitment method (voluntary participation of each subject in the study).

Furthermore, some of the data may not be accurate enough as a result of self-reported information. Another limitation could be the period of data collection that was only two months.

Moreover, the findings may be very setting-specific and may be influenced by the relationship with the pharmacy and other local factors that are very difficult to control for.

Ethics statement

The subjects gave an informed consent and the subjects participated in the study on a voluntary basis. Moreover, the interviewees were chosen neither because of a particular illness state nor the assumption of a specific drug; the respondents were instead randomly selected and moreover they were informed on the characteristics and the purpose of the study. The questionnaire was anonymous, personal data were not collected and there is no way to trace back the answers to a specific responder.

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Disclosure of potential conflicts of interest

No potential conflicts of interest were disclosed.

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